Date:

EXPERIMENT NO. 6

AIM: Design, Implement and verify operation of BCD to Excess-3 code convertor circuit.

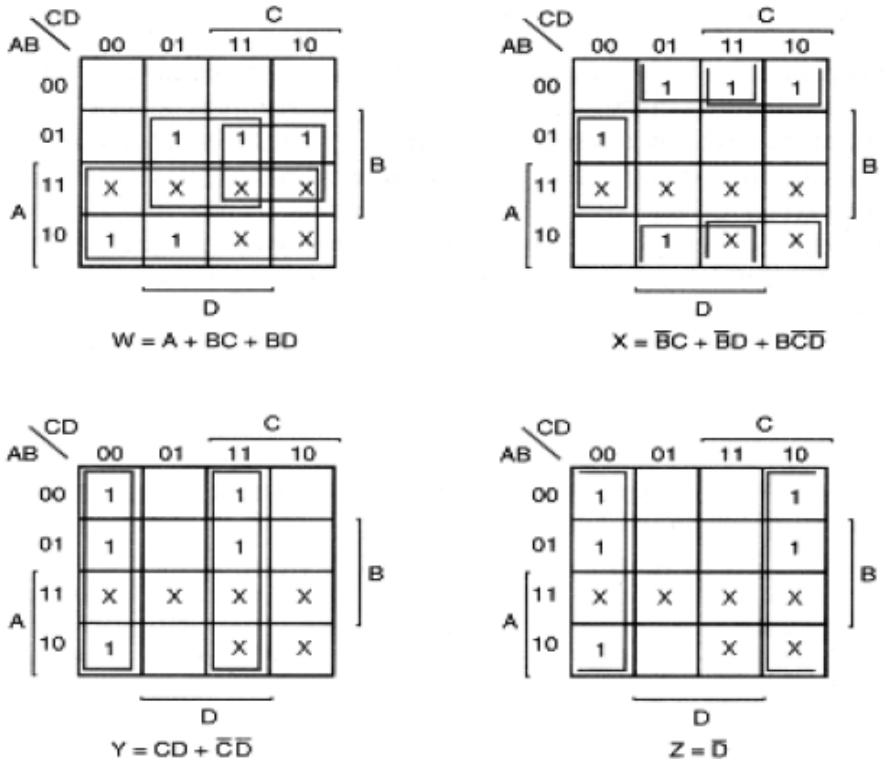
APPARATUS: connection wires, power supply, power project board, resistors, LED, ICs

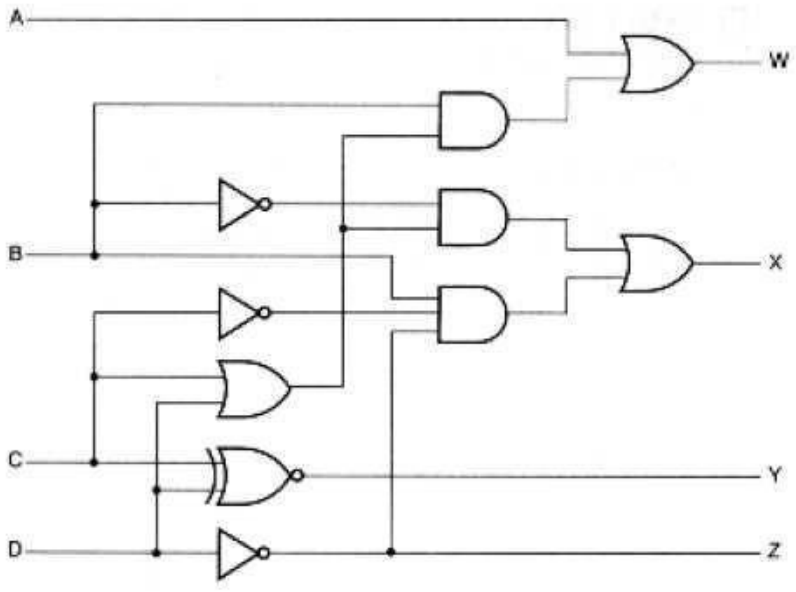
Sr.No.	Component	Specification	Quantity
1	AND Gate	IC 7408	1
2	OR Gate	IC 7432	1
3	NOT Gate	IC 7404	1
4	XOR Gate	IC7486	1

THEORY:

We will complete this experiment to code converters by designing an Excess3 to Binary Coded Decimal (BCD) circuit. The term BCD refers to representing the ten decimal digits in binary forms*;* which simply means to count in binary*;* see Table below. The Excess3 system simply adds 3 to each number to make the codes look different. We will not venture to discuss the importance of the Excess3 BCD system because the discussion would serve too great a distraction from our present purpose and the cost would outweigh the benefit. Suffice it to say that the Excess3 BCD system has some properties that made it useful in early computers.
The Excess3 BCD system is formed by adding 0011 to each BCD value as in Table. For example, the decimal number 7, which is coded as 0111 in BCD, is coded as 0111+0011=1010 in Excess3 BCD.

Decimal	BCD 8 4 2 1	Excess-3 BCD + 0011
0	0 0 0 0	0 0 1 1
1	0 0 0 1	0 1 0 0
2	0 0 1 0	0 1 0 1
3	0 0 1 1	0 1 1 0
4	0 1 0 0	0 1 1 1
5	0 1 0 1	1 0 0 0
6	0 1 1 0	1 0 0 1
7	0 1 1 1	1 0 1 0
8	1 0 0 0	1 0 1 1
9	1 0 0 1	1 1 0 0





BCD to Excess-3 Code conversion logic diagram

PROCEDURE:

i). Make connections as per logic circuit diagram.

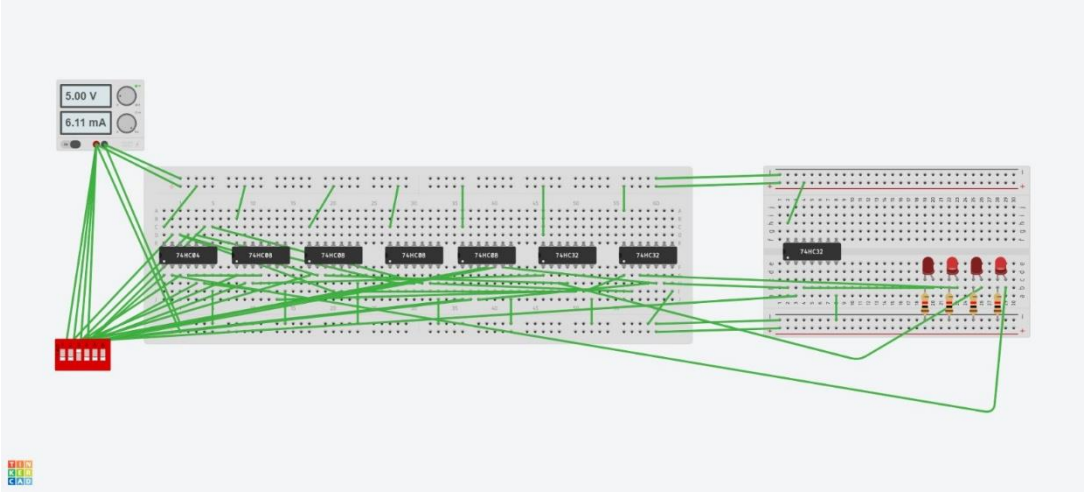
ii). Apply proper input condition and observe the output information of led on/off.

iii). Apply all possible combinations of input and verify correctness of circuit output as per truth tables.

OBSERVATION TABLE:

	Input				Output			
Decimal	a	b	c	d	w	x	y	z
0	0	0	0	0				
1	0	0	0	1				
2	0	0	1	0				
3	0	0	1	1				
4	0	1	0	0				
5	0	1	0	1				
6	0	1	1	0				
7	0	1	1	1				
8	1	0	0	0				
9	1	0	0	1				

OBSERVATION:

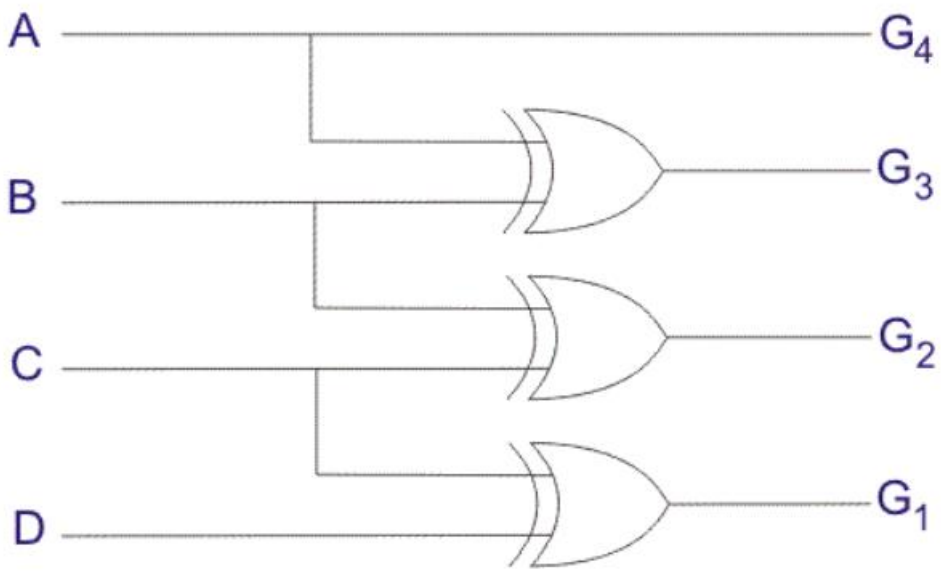


Obtained Marks:
Faculty Sign:
Date:

ASSIGNMENT:

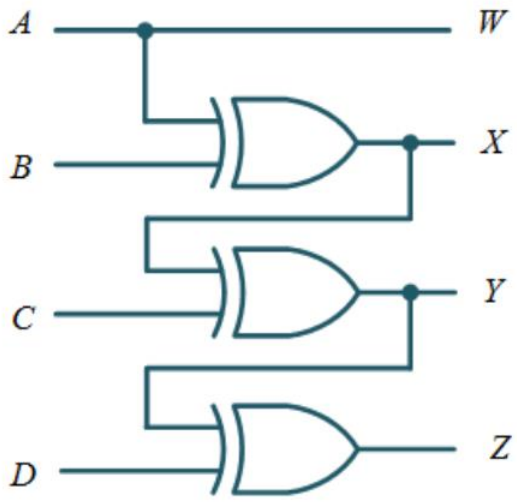
1. Design 4-bit Binary to Gray code converter.

Ans.



2. Design 4-bit Gray to Binary code converter.

Ans.


A
W
B
X
C
Y
D
Z